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ABSTRACT

The annotated bibliography is intended to inform those concerned with personnel guidance, recruiting, and hiring in industry, research, education, and government about the available publications relating to the employment of Black, Mexican American, Puerto Rican, and American Indian engineers. To facilitate its usefulness, the bibliography is organized into three parts. Part I cites 14 lists, rosters, and directories that provide information about minority engineers as individuals--their names, affiliations, locations, and other relevant personal data. Part II includes 24 lists, documents, and articles that contain statistical data such as degrees, professions, manpower, salaries, educational and career-related characteristics, engineering and technology enrollments, and educational costs entailed in reaching a ten-fold increase in minority engineering graduates. Part III is a selected list of eight other current publications that add perspective about engineering as a professional career, but do not necessarily concern ethnic and racial groups. (NQ)

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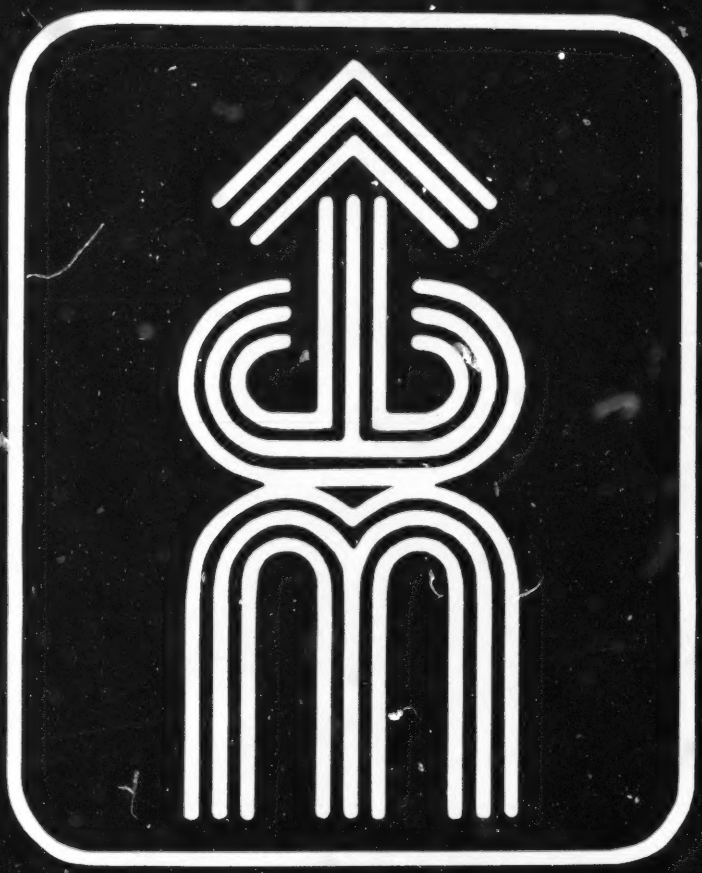
A SELECTED, ANNOTATED BIBLIOGRAPHY ON EMPLOYMENT OF MINORITY ENGINEERS

Committee on Minorities in Engineering
Assembly of Engineering
National Research Council



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2

A SELECTED, ANNOTATED BIBLIOGRAPHY ON

EMPLOYMENT OF MINORITY ENGINEERS

Prepared by:

Subcommittee on Manpower Utilization

Committee on Minorities in Engineering
Assembly of Engineering
National Research Council

National Academy of Sciences
Washington, D. C. 1975

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INTRODUCTION

The purpose of this annotated bibliography is to inform those concerned with personnel guidance, recruiting, and hiring in industry, research, education, and government about the available publications relating to the employment of engineers from minority groups. The minorities in this instance are Blacks, Mexican Americans (Chicanos), Puerto Ricans, and American Indians.

This bibliography was prepared by the Subcommittee on Manpower Utilization of the National Research Council's Committee on Minorities in Engineering. One of the main functions of this subcommittee is to gather and disseminate information of use to executives, counselors, teachers, and workers in this field -- those who seek to identify and motivate able young members of minority groups, those who teach and train them, and those who employ and otherwise support and promote them.

To facilitate the usefulness of this bibliography it is organized into three parts:

I. lists, rosters, and directories that provide information about minority engineers as individuals -- their names, affiliations, locations, and other relevant personal data;

II. lists, documents, and articles that contain statistical data such as degrees, professions, manpower, salaries, and so on;

III. is a selected list of other current publications that add perspective about engineering as a professional career, but do not necessarily concern ethnic and racial groups.

The subcommittee invites readers to report any new or additional publications which may be incorporated into subsequent editions of this bibliography. Such information should be sent to:

Subcommittee on Manpower Utilization
Committee on Minorities in Engineering
Assembly of Engineering
National Research Council
2101 Constitution Avenue, N.W.
Washington, D.C. 20418

PART I: DIRECTORIES LISTING INDIVIDUAL MINORITY ENGINEERS

Black Engineers in the United States, A Directory $18.00

Howard University Press
P. O. Box 863
2400 Sixth Street, N.W.
Washington, D. C. 20001

Editor: James K. K. Ho, Howard University, Washington, D. C.

Published in 1974

This Directory contains the names of 1,511 Black engineers (of the estimated 7,000 total). Each alphabetical entry lists job title or occupation; employer's name and location; place and date of birth; degree, college and year; past positions; memberships; honors; patents; publications; specialties; licenses, and current address.

The Directory also lists the names of the entries by major disciplines, geographic location and those that are registered engineers. It also contains a list of approximately 800 undergraduate and post graduate Black engineering students by discipline, with the name of their college.

Directory of Spanish Surnamed and Native Americans in Science and Engineering $15.00

Dr. J. V. Martinez
c/o Chemical and Atomic Research Branch
U.S. Energy Research and Development Administration (ERDA)
20 Massachusetts Avenue
Washington, D. C. 20545

Published in 1972

Directory of Spanish Surnamed and Native Americans in Science and Engineering (cont'd.)

Lists 198 individuals, their address, business, birthplace and date, degree, institution, and fields of special interest. A revision is expected to be published in late 1975.

This work is a personal effort by Dr. Martinez started when he was on the faculty of St. John Fisher College. The directory is not a publication of ERDA.

Directory of Spanish-Surnamed College Graduates — Out of print

Cabinet Committee on Opportunities for Spanish Speaking People
1707 H Street, N.W.
Washington, D. C. 20506

Published in 1971

Now out of print, this directory includes names, addresses, college, and degree. A revision was scheduled for publication in late 1975.

The Ebony Success Library — $27.95 per set

Volume I - 1,000 Successful Blacks

Volume II - Famous Blacks Give Secrets of Success

Volume III - Career Guide: Opportunities and Resources for You

Johnson Publishing Company
820 South Michigan Avenue
Chicago, Illinois 60605

Published in 1973

More than 1,100 biographical and career sketches of Black men and women who have achieved success in the arts, sciences, engineering, sports, and other fields are presented.

Volume III is designed as a reference source for Black students in selecting and planning a career. Information regarding training, outlook, scholarships and financial aid, and organizations to contact for additional source materials are provided for each field presented.

Native American Professional Resource Directory — $4.50

Daniel Honahni
Southwestern Cooperative Educational Laboratory
2017 Yale S.E.
Albuquerque, New Mexico 87106

Native American Professional Resource Directory (cont'd.)

August 1973

This directory was prepared under a contract for the Bureau of Indian Affairs. It contains the names of 1,076 American Indian individuals from numerous tribes and academic degree backgrounds. It is separated into three categories: 1) Academic Degree Index, 2) Individual Information Index, and 3) Tribal Index.

The directory lists 37 who hold degrees in engineering, 1 in engineering technology, and 2 with degrees in electronics. The alphabetical listing contains name and address, tribe, position, expertise, and educational background.

Roster of Members, Association of Black Engineers and Applied Scientists

Prof. Vassal Johnson
Wayne State University
Detroit, Michigan

List of 150 members, mostly undergraduate students, with biographical and other job placement information. Listing includes members from other colleges in the area of Wayne State, which has the largest number. Information is computerized.

Roster of Members, Mexican-American Engineering Society

Mexican-American Engineering Society
P.O. Box 41
Placentia, California 92670

Manuel Castro, President

Roster of Members

Roster of Registered Professional Engineers State of California, 1975

Society of Hispanic Professional Engineers
P.O. Box 48, Main Office
Los Angeles, California 90053

Rodrigo T. Garcia, President

This roster contains names and addresses of 442 Hispanic American engineers in California.

Roster of Registered Professional Engineers
State of New Mexico, 1975

Society of Hispanic Professional Engineers
P.O. Box 48, Main Office
Los Angeles, California 90053

Rodrigo T. Garcia, President

This roster contains names and addresses of 139 Hispanic American engineers in New Mexico.

Roster of Women and Minority Engineering Students, 1975* $60.00 Contribution

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

February 1975

Lists 1,933 women and minority students from 97 engineering colleges who expected to graduate in 1975 and 1976. The directory gives name, field of study, degree level, sex, ethnic group, year of graduation, availability status, and the address of college placement contacts.

*A new roster is published each year. Availability and price of future editions is subject to change.

Rosters of Minority and Women Professionals $3.95

American Association for the Advancement of Science
The Office of Opportunities in Science
1515 Massachusetts Avenue, N.W.
Washington, D. C. 20005

January 1975

A useful booklet about rosters, their uses and effectiveness. Contains advice to roster-makers and recommendations about the feasibility of a comprehensive roster of women and minority professionals.

The booklet lists eight of the directories contained in this Bibliography. In addition, it lists a total of 37 directories of minorities in other professions such as dentistry, higher education, history, and mathematics.

Computerized Search Systems

There are two computerized search systems that specialize in identification and referral of minority professionals. Information put into the data bank is usually obtained directly from individuals. Retrieval and matching service is provided, usually at a fee, for employers with specific openings.

Professional Search and Referral System

Fee per search

SER-Jobs for Progress, Inc.
Professional Search System
9841 Airport Blvd.
Los Angeles, California 90045

This is an ongoing computerized data bank currently containing the names of 758 Spanish Surnamed American professionals of whom 38 are engineers. Information includes education, salary, occupational preference, geographic preference, address.

The system is a service for employers who wish to search the data bank for SSA professionals whose credentials match the descriptions supplied by the employer.

Skills Bank, National Urban League

Contribution or fee per search

National Urban League
477 Madison Avenue
New York, New York 10022

A computerized data bank at the national level, with several sub systems compiled and used regionally. Primary purpose is for placement. Entries are categorized by skill, educational background, and other descriptors.

PART II: DOCUMENTS ABOUT THE OCCUPATION OF MINORITY ENGINEERS

(contain some specific data on minorities in engineering)

Career Plans of Black and Other Non-White College Graduates — $3.50

The CPC Foundation
65 East Elizabeth Avenue
Bethlehem, Pennsylvania 18018

By: Helen S. Astin and Ann S. Bisconti

Published in 1973

This report examines the career plans of non-white graduates of 1965 and 1970. Minority groups of Asian Americans, American Indians, Spanish-surnamed Americans, and Blacks are identified. Separate analysis was made of plans of Black graduates. Data is presented on academic major, career plans, first employment and expected long-run employment. Most of the tabulations show data for engineers.

Characteristics of Persons in Engineering and Scientific Occupations, 1972 — $2.65

U.S. Department of Commerce
Social and Economic Statistics Administration
Bureau of the Census
Washington, D. C.

Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402

April 1974

This is the second in a series of reports based on the 1972 Professional, Technical and Scientific Manpower Postcensal Survey sponsored by the National Science Foundation and conducted by the Bureau of the Census. It contains detailed statistics on the educational and career-related characteristics of persons reported in the 1970 Census as being

Characteristics of Persons in Engineering and Scientific Occupations, 1972 (cont'd.)

in the experienced civilian labor force in one of six categories including engineering. A few of the tabulations of this 157-page book contain data on "Engineers - Races Other Than White."

Current Data on Minorities in Engineering — Free

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

This is not a publication. EMC compiles data on minority enrollments and degrees in engineering, and on other aspects of the profession, on a continuing basis. Various summaries are prepared or updated from time to time. Requesters should specify what information they are seeking, and EMC will provide appropriate material as available.

Engineering and Technology Degrees, 1974* — $10.00

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

January 1975

This report gives the number of engineering and technology degrees granted for the academic year ending in June 1974. The engineering tables include all 284 colleges known by EMC to offer engineering degrees at the bachelor's level or higher.

The report includes tabulation of engineering degrees by curriculum for each of four minority classifications.

*A similar report on the graduating classes of 1975 is expected to be published in early 1976. Surveys are conducted and reports published annually. Price of future editions is subject to change.

Engineering and Technology Enrollments, Fall 1974* — $35.00

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

Engineering and Technology Enrollments, Fall 1974* (cont'd.)

John D. Alden, Executive Secretary

April 1975

A 170 page tabulation of enrollments in 282 engineering colleges and 508 technical institutions, giving data by school, curriculum, and class year. It indicates where engineering graduates are likely to be available in the next few years, based on students currently enrolled. It contains data tables by college for each of four minority groups: Blacks, Spanish Surnamed, Asian and American Indians.

*Surveys are conducted and reports published annually. Price of future editions is subject to change.

Minorities in Engineering - A Blueprint for Action — Free

The Alfred P. Sloan Foundation
630 Fifth Avenue
New York, New York 10020

By: The Planning Commission for Expanding Minority Opportunities in Engineering

Louis Padulo, Chairman

December 1974

This landmark document, also known as the "Sloan Task Force Report", focuses on a detailed analysis and projection of financial needs and educational costs entailed in reaching the goal of a tenfold increase in minorities graduating from engineering colleges. It includes 20 recommendations which have become the point of departure for the national minority engineering effort.

It does not deal with details of the utilization of minority engineers, but the premise of the study is based on the numerical under-representation of minorities in engineering occupations.

Minorities in Engineering (Manpower Bulletin No. 27) — $2.00 single copy - Bulk Rate also available.

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

Published 1974

Minorities in Engineering (Manpower Bulletin No. 27) (cont'd.)

A six-page bulletin compiling data from a variety of sources to provide an estimate of the quantitative role of minorities in the engineering profession.

Minority Groups Among United States Doctorate Level Scientists, Engineers, and Scholars, 1973 — Free

Commission on Human Resources
National Research Council
2101 Constitution Avenue
Washington, D. C. 20418

December 1974

Analysis of data on doctoral level minority engineers, other scientists and scholars.

Opportunities for Blacks in the Profession of Engineering — $3.00

Foundation for the Advancement of
Graduate Studies in Engineering
70 Summit Street
Newark, New Jersey 07103

By: Dr. Robert Kiehl, Newark College of Engineering

October 1970

Prepared for the Manpower Administration, U.S. Department of Labor. A study on Blacks employed in engineering, type of work performed, salary, status, and job satisfaction. Data was collected from administrators of 263 engineering colleges and 680 technician training institutions. Opinions of 295 Black engineering graduates of 1968 and 1969 were sought. All seven of the predominantly Black engineering colleges offering engineering degrees at that time were visited.

The study also contains a series of recommendations arising from the author's findings in preparation of the study.

Professional Women and Minorities, A Manpower Data Resource Service — $40.00

Scientific Manpower Commission
1776 Massachusetts Avenue, N.W.
Washington, D. C. 20036

By: Betty M. Vetter and Eleanor L. Babco

May 1975

A very comprehensive new study supported in part by the Ford Foundation, brings together virtually all current available data on manpower at professional levels with special emphasis on women and minorities in the natural and social sciences, engineering, arts, humanities, education, and the professions. It includes basic information on affirmative action. Data came from more than a hundred sources. An updating service provides new and revised information semi-annually at $20.00 per year. This 320-page loose-leaf book contains 42 pages of data and statistics on women and minorities in engineering.

Racial Minorities in the Scientist and Engineer Popluation: 1972

Science Resources Studies Highlights
National Science Foundation
Washington, D. C. 20550

Document NSF 75-314

Norman Seltzer, Manpower Utilization Studies Group, NSF

Fall 1975

This document, now in preparation, is expected to be published in early Fall 1975. It is a special follow-up on the 1972 Postcensal Survey concentrating on the data on racial minorities in engineering.

Scientific, Engineering, Technical Manpower Comments $15.00/yr.

Scientific Manpower Commission
American Association for the Advancement of Sciences
1776 Massachusetts Avenue
Washington, D. C. 20036

Betty M. Vetter, Editor

Published 11 times per year

A periodical published by the Scientific Manpower Commission that contains information on current studies on various subjects pertaining to employment of scientific, engineering, and technical professionals. Occasionally contains information about minorities in engineering.

Selected Characteristics of Five Engineering and Scientific Occupational Groups, 1972 — Free

Science Resources Studies Highlights
National Science Foundation
Washington, D. C. 20550

Document NSF 73-306

Norman Seltzer, Manpower Utilization Studies Group, NSF

July 1973

A preliminary report presenting selected data resulting from the 1972 Professional, Technical and Scientific Manpower Postcensal Survey conducted by the Bureau of the Census under the sponsorship and guidance of the National Science Foundation. A few of its tabulations present data on "Engineers - Races Other Than White."

Special Issue on Minorities in Engineering
IEEE Transactions on Education — $3.00 (members) 6.00 (non-members)

The Institute of Electrical and Electronics Engineers, Inc.
345 East 47th Street
New York, New York 10017

Lindon E. Saline, Guest Editor

February 1974

Contains a collection of current articles, focusing attention on considerations and activities pertinent to increasing minority engineering graduates. Of particular relation to employment are the articles:

- "Women and Minorities in Engineering" by John D. Alden (EMC) that presents data on the representation of minorities in the engineering profession.

- "Using Engineering-Related Employment to Supplement Engineering Education for Minorities" by Arthur F. Hartford, Jr. (duPont). This article cites examples illustrating how business and education working together can make a significant impact on alleviating the shortage of minority representations in the engineering profession.

- "Co-Operative Engineering Education - A Means of Meeting a National Need to Increase the Number of Black Engineering Graduates"

Special Issue on Minorities in Engineering
IEEE Transactions on Education (cont'd.)

by Fred N. Peebles (U. Tennessee). This paper outlines the "pre co-op work/experience" immediately following graduation from high school and a typical work/study program.

The Social and Economic Status of the Black Population in the United States, 1973 $2.75

U.S. Department of Commerce
Bureau of the Census
Washington, D. C.

Order from Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402

July 1974

A statistical analysis derived from Census Data of the economic and social status of Black Americans. In the tabulations dealing with occupations and employment, a few of the listings specify engineers.

ARTICLES

In addition to the above publications, there have also been a large number of articles about minorities in engineering that have appeared in serial publications. Following is a representative list of articles published in recent years.

"Career Guidance Programs for Minority Youth", L. M. May and J. E. Roembke. American Society of Civil Engineers Proceeding 100: 207-212; July 1974.

"Career in Science and Engineering for Black Americans", A. Y. Wilburn. Science 184: 1148-1154; June 14, 1974.

"First Black Engineers in Olin Program", Chemical & Engineering News 52: 26; April 8, 1974.

"Industry Entices Minority Youth to Engineering", H. Jackson. Civil Engineering 44: 54-56; July 1974.

"Minorities in Engineering", Chemical Engineering Progress 70: 40-41; June 1974.

"Minorities in Engineering: How Does Your Company Stack Up?", American Society of Civil Engineers Proceeding Discussion. S. E. Cooper 100: 368-369; October 1974.

"A Profile of 1,500 Black Engineers in the United States", by Percy A. Pierre and James K. K. Ho. To be published in Fall 1975. This article is an analysis of the information collected for the book "Black Engineers in the United States, A Directors" published in 1974 by Howard University Press.

"Statistics on Blacks in Engineering", The Howard Engineer, M. Lucius Walker, Jr., Chairman of Mechanical Engineering and David A. Boston, Graduate Student, March-April 1972. A significant article providing documentation of the rationale concerning the shortage of the supply of Black engineers in the profession, graduating from college and enrolling in college.

"Symposium on Increasing the Participation of Minorities in Engineering", Washington Civil Engineering 43: 70-71; August 1973.

PART III: CURRENT DOCUMENTS ABOUT ENGINEERING OCCUPATIONS

(No specific data on minorities in engineering)

College Graduates and Their Employers, A National Study of Career Plans and Their Outcomes — $5.00

The CPC Foundation
65 East Elizabeth Avenue
Bethlehem, Pennsylvania 18018

By: Ann Stouffer Bisconti

Published in 1975

This is a follow-through study on the same group of 1961 and 1966 freshmen whose career plans and paths were analyzed in the 1975 College Placement Council study "Career Plans of College Graduates of 1965 and 1970." It documents the career development of these students through ten years after their entry to college.

No specific data on minorities is presented.

The Demand for Engineers, April 1975* — $10.00

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

July 1975

This report documents results of a survey taken in April 1975 on immediate and near-future plans for hiring engineers. Some 586 employers responded with over 81,000 engineers employed. The report presents a useful picture of employment prospects in major employment groups and major branches of engineering for various levels of educational attainment.

The Demand for Engineers, April 1975* (cont'd.)

*Surveys are conducted and reports published at approximately six-month intervals. Price and availability of future editions are subject to change.

Doctoral Scientists and Engineers in the United States, 1973 Profile — Free

National Academy of Sciences
Commission on Human Resources
National Research Council
2101 Constitution Avenue
Washington, D.C. 20418

Revised July 1974

This report tabulates and presents numerous charts on various occupational aspects of the 244,900 doctoral scientists and engineers in the United States. Of these, 35,067 are identified as having doctorate degrees in engineering.

There are no tabulations showing statistics on minorities although the survey questionnaire asks for "ethnic group." There is a statement that "In general, the number of respondents reporting information on particular survey items was very satisfactory. Item #8, which pertained to ethnic group membership, was a notable exception, probably because of the unfamiliar categorizations."

The Engineer and the Social System — $10.95

John Wiley & Sons, Inc. - 1969
605 Third Avenue
New York, New York 10016

By: Robert Perrucci and Joel E. Gerstl

Published in 1969

Collection of essays concerned with the analysis of the engineering profession in the context of the social systems in which it functions. It contains a chapter on the female in engineering presenting statistical data on recruitment, practices in employment, and working conditions.

Occupational Outlook Handbook, 1974-75 $6.78

U.S. Department of Labor
Bureau of Labor Statistics
Washington, D. C.

Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402

Basic reference source which provides encyclopedia information on work for over 800 occupations and 30 major industries. A section is included which gives information about the overall engineering field and separate statements on 11 branches of the profession -- aerospace, agricultural, biomedical, ceramic, chemical, civil, electrical, industrial, mechanical, metallurgical, and nursing engineering.

Information provided includes what engineers do, training and educational requirements, advancement possibilities, occupational outlook, earnings and work conditions, and sources of additional information.

Professional Income of Engineers - 1974* $8.00

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

John D. Alden, Executive Secretary

December 1974

The eleventh in a series of surveys designed to give basic salary information and trends over recent years on engineers in the United States. Salaries are analyzed on the basis of years of experience since the baccalaureate degree, for supervisory and non-supervisory engineers by three degree levels - bachelor's, master's and doctor's. In all, 813 establishments responded (including government agencies and educational institutions) covering 181, 699 engineering graduates.

*Surveys are conducted and reports published at two-year intervals. Price of future editions is subject to change.

Prospects of Engineering and Technology Graduates 1974-75* $10.00

Engineering Manpower Commission
Engineers Joint Council
345 East 47th Street
New York, New York 10017

Prospects of Engineering and Technology Graduates 1974-75* (cont'd.)

John D. Alden, Executive Secretary

January 1975

Contains numerous tables on the placement status of engineering graduates at various degree levels and majors. Does not report specific data on minority engineers.

*Surveys are conducted and reports published annually. Price of future editions is subject to change.

The 1972 Scientist and Engineer Population Redefined, Volume 1. Demographic, Educational and Professional Characteristics $3.70

National Science Foundation
Washington, D. C. 20550

Document NSF 75-313

Stock Number 038-000-00228

Order from: Superintendent of Documents, U.S. Government Printing Office, Washington, D. C. 20402

May 1975

This report, based on the 1972 Postcensal Survey, presents detailed statistics on the demographic, educational and professional characteristics of over 1.3 million scientists and engineers in the United States. It is the first comprehensive report providing such information based on a redefined population of scientists and engineers.